PLI-82

CONTACT DUPLICATING AND RESEAU PRINTER

AND

HIGH RESOLUTION STEP AND REPEAT PRINTER

TWENTIETH
MONTHLY LETTER REPORT

MARCH 10, 1966

Period: February 1, 1966 to March 1, 1966

STAT

TABLE OF CONTENTS

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1.0 CONTACT DUPLICATING AND RESEAU PRINTER

1.1 Purpose

The over-all objective of the current contract is the design, fabrication, test, and delivery in fifteen months of a Photographic, Step and Repeat, Contact Duplicating and Reseau Printer. Prime design goals are high-speed automatic operation, variable format capability, and high resolution with minimum film distortion or damage. The delivered equipment will be suitable for operational use. The printer will accommodate films of 70 mm to 9-1/2" width with frame lengths up to 30 inches and will provide operation in the reseau mode and selective mode as options.

1.2 Activity of this Report Period

Final assembly of the reseau grid and glass platens has been completed and STAT has been shipped to [redacted] for final fitting and test in the printer.

STAT The [redacted] transport breadboard and frame edge detection circuits were delivered to the customer in Washington for tests on January 28. The breadboard was modified by the customer to test 70 mm films, and tests were conducted in a classified area by the customer. The results were considered satisfactory STAT by the customer, and were discussed in detail at a meeting held at [redacted] STAT [redacted] on February 15.

The problems presented by the monitors as a result of the tests were as follows:

1. Intermittent problem stopping on two frames of 70 mm film. What about 5" frames on 5" wide film with one inch frame separation?
2. Great difficulty stopping on 1/8" boundaries.
3. Poor tracking of transport, particularly with respect to the edge sensor.
4. Constant transport speed problem.
5. What is necessity for dancer roller?
6. What are transport speeds? Can they be varied to accommodate narrow boundaries?
7. What is minimum space between frames that can be sensed?

8. What adjustments by operator are necessary?

9. What is delivery schedule?

These questions were discussed in length and resulted in the following:

1. Sensing of 2 frames of 70 mm film may be a problem because the sensing head is 5" from the gate, and the lamps require time to warm up. The latter problem can be possibly solved by turning the lamps on some milliseconds before the transport starts. The customer will accept 3 frames if 2 cannot be sensed. The customer would like to be able to print single 5" frames of 5" film. The problem is alleviated here, since the boundaries are likely to be one inch wide.

2. We cannot reliably sense 1/8" boundaries because of the large aperture size required by the photocells. The boundary "time out" circuit control will be made available to the operator. While frame detection may be improved by varying this factory-set control, false triggering within the frame may become more prevalent with certain types of images.

3. Transport tracking is a function of spool and guide roller alignment, threading of film properly on the spool, and spool quality. [redacted] STAT feels there will be no tracking problem in the printer. The frame edge detector aperture will be oriented along the length of the film to make it less sensitive to film wander.

4. Constant speed is a function of the film sensing arm-motor controls. These can be adjusted to provide nearly constant speed from one end of the roll to the other. (Less than 20 per cent variation).

5. The dancer roller is required to smooth out transients in the transport operation. It is not possible to prevent contact with the emulsion; however, highly polished and hardened rollers will be used to prevent scratching. The rollers will be conductive if required to prevent static electricity build-up.

6. Maximum negative transport time will be approximately 3 seconds for a 30" advance. For longer than 12" advances, high speed advance will be coupled with a 1/3 speed slow down for the last 5" of advance. With shorter than 12" advances, film is always advanced 1/3 speed.

7. The minimum space that can be sensed is a function of many variables, such as uniformity of boundaries, density, etc. It may be possible to sense 1/8" boundaries under certain conditions if a proportionately high percentage of false triggers can be tolerated.

8. The customer requested that, in the event of a skipped frame, the transport be stopped and a failure indication be provided on the control panel.

9. Adjustments required by the operator will probably be as follows:

   A. 3 position switch: (1) low density boundaries, (2) high density boundaries low range, (3) high density boundaries high range.

   B. 4 position Mode Switch:

      1. Fixed density reference
      2. Equality
      3. Combination of (1) and (2)
      4. Edge reference

   C. Reference Density Control associated with mode (1) above.

   D. Frame Length Timer Control

   E. Boundary Timer Control

   F. Skipped frame reset pushbutton

The meeting was continued at the [redacted] shop where the Printer and Pre-View and Punch Station were shown to the technical monitors. STAT

After examination the following conclusions were agreed upon:

1. The F.E.D. controls would be located on the F.E.D. chassis above and behind the raw stock supply spool.

2. [redacted] would light-seal the upper raw-stock pull-out drawer in accordance with the Design Plan. This will further permit use of a standard white light for viewing rather than a safe light, if required. STAT

3. The pre-view and punch station would be mounted on legs. An attempt would be made to provide microscope and controls at a comfortable operating height when the operator is seated.

A delivery schedule was presented to the monitors and an advance copy of the operator's manual was delivered to STAT [redacted] for comment.

A contractual discussion was held in Washington with the contracting officer and the technical monitors on February 28 to resolve the question of funding for the remainder of the program, and the change of scope problem. A proposal will be submitted to the contracting officer in March as a result of the negotiations at the meeting.

1.3 Plans for Next Period

Final assembly of the frame edge detector and exposure control circuits should be completed. Final test will be initiated.

1.4 Problems

Problems associated with component and vendor deliveries may cause delay of final assembly. Every effort to improve delivery is being undertaken.

1.5 Documentation

Verbal approval of the frame edge detector was received on February 15, 1966 from the technical monitors.

1.6 Questions Outstanding

Final resolution of change of scope and funding is pending.

2.0 HIGH RESOLUTION STEP AND REPEAT PRINTER

2.1 Purpose

The purpose of this effort is to design, fabricate, test and deliver in twenty months a high precision, step and repeat, photographic contact printer. This printer will be capable of producing photographic contact prints of the highest possible resolution and accuracy from 70 mm to 5" width

varying from 70 mm to 9-1/2" and in preselected frame lengths from 5 inches up to a maximum of 30 inches.

2.2 Activity of this Report Period

Resolving Power tests were held at [redacted] on the Printer-2 Breadboard on STAT January 31 with the technical monitors. Films processed early in February at the customer's facility indicated fogging as a result of not masking the test targets for 70 mm operation.

STAT The tests were repeated at [redacted] on February 23 with new test targets and were taken to Washington for processing and evaluation.

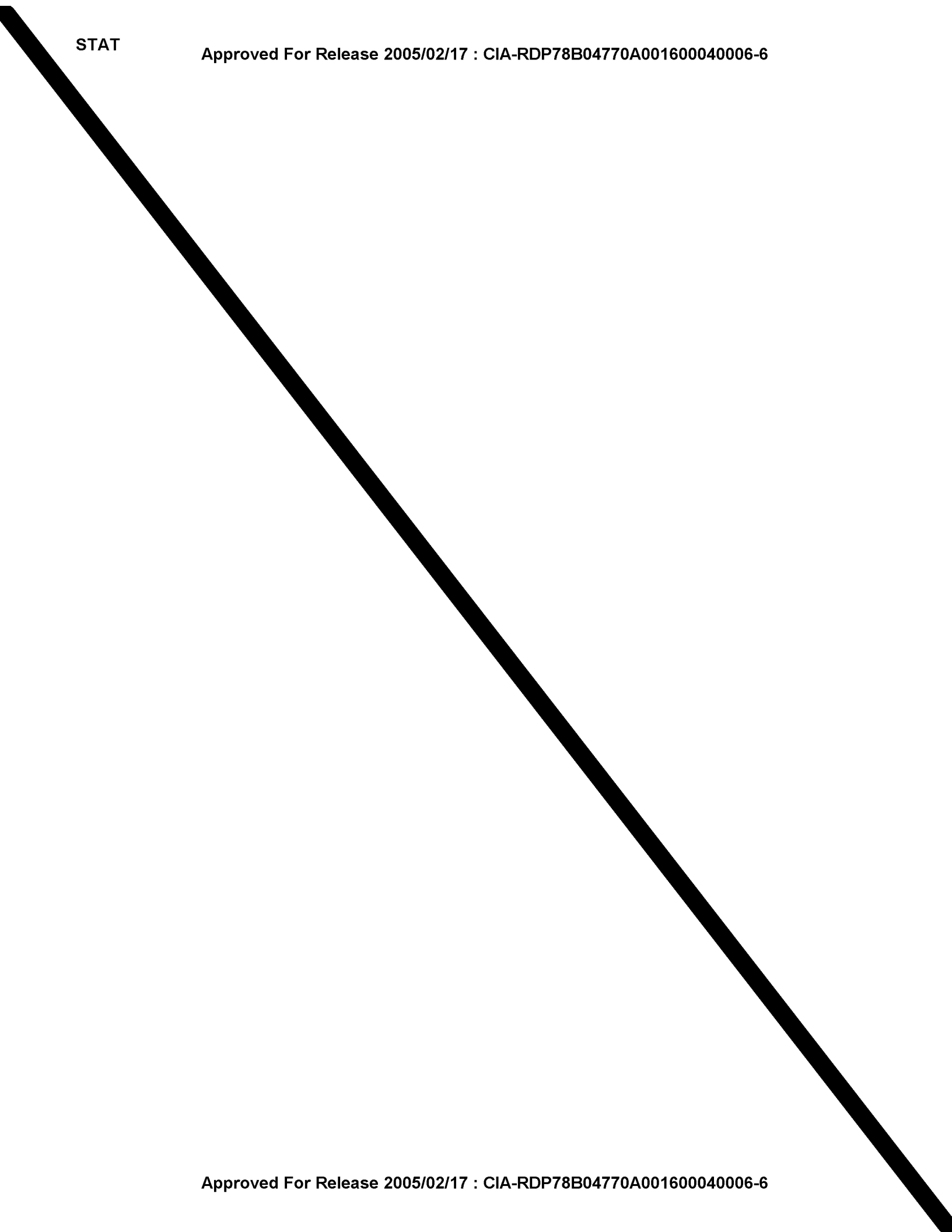
The test films were examined at Washington on February 28, and it was generally agreed that they indicated that 400 lines per millimeter could be resolved, and could probably be extended, particularly if, in the final printer, optically flat and U.V. transmissive glass were used in the platen, and if slight improvements were made to the light collimating tubes in the light source. It was generally agreed that gray scale reproduction was satisfactory.

2.3 Plans for Next Report Period

Review and resolution of contract status is contemplated.

2.4 Questions Outstanding

Change in scope question and lack of funds has not been resolved.



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